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07/746,386 08/16/91 AFZALI-ARDAKANI

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07/27/92

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-52 are pending in the application.
Of the above, claims 15-22, 24-30, 37-42 & 48-52 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-14, 23, 31-36 & 43-47 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-14, 23, 31-36 and 43-47, drawn to an electrically conductive composition containing a polydopant and method of producing such, classified in Class 252, subclass 500.

II. Claims 15-22 and 37-42, drawn to an electrically conductive composition containing a thermally deblockable dopant which are different than those dopants of group I claims, classified in Class 252, subclass 500.

III. Claims 24-30 and 48-52, drawn to shaped articles and methods of using, classified in Class 428, subclass 1+.

The inventions are distinct, each from the other because of the following reasons:

Group I is distinct from Group II since the dopants in each group are completely different and non-obvious with one another. Groups I and II are distinct from Group III since Group III is directed towards article claims that do not required the specific compositions of either of Groups I or II.

Note that the Examiner would examine any generic article claims that contained all of the limitations of the elected composition claims.

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as recognized by their divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Thomas A. Beck on July 15, 1992 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14, 23, 31-36 and 43-47. Affirmation of this election must be made by applicant in responding to this Office action. Claims 15-22, 24-30, 37-42 and 48-52 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention.

Claims 1-7, 23, 31, 32 and 34 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "polydopant" is considered indefinite and confusing. One with ordinary skill in this art would not know if this term was limited to dopant polymers or if it included non-polymer dopants with multiple dopant sites. It is recommended that applicant insert the Markush group of claim 8 into the independent claims in order to overcome this rejection.

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Also, claim 23 lacks proper antecedent basis. It appears that "[t]he electrically conductive polymer" should read, "[a]n electrically conductive polymer". Additionally, the term "frustrated" in claim 23 is not completely understood; clarification is requested.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1-14, 23, 31-36 and 43-47 are rejected under 35 U.S.C. § 103 as being unpatentable over each of US 4,933,106 (Sakai et al.), US 4,940,517 (Wei), US 5,068,060 (Jen et al.) ~~and~~ ^{or} US 4,771,111 (Tieke et al.).

The present claims are drawn to an electrically conductive composition containing an electrically conductive polymer and a

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polymer dopant, the method of making such a composition and articles formed therefrom. The electrically conductive polymer and the polymer dopant can be selected from lists of well known conductive polymers and well known polymer dopants. Each of the references listed above teach an electrically conductive composition containing an electrically conductive polymer and a polymer dopant as claimed by applicant. Each reference teaches at least one embodiment of applicant's invention. While some of applicant's dependent claims recite a specific conductive polymer with a specific dopant, nothing unobvious is seen in merely selecting a conductive polymer and a polymer dopant from lists of materials that are taught by the prior art.

Sakai discloses an electrically conductive composition containing a conductive polymer and a polymer dopant, which can be the same as those presently claimed. See columns 2 and 3. For example, Sakai teaches polypyrrole and polythiophene as polymers and teaches polyacrylic acid, polysulfonic acids and acids containing carboxylic groups as dopants. It would have been prima facie obvious for the skilled to make an electrically conductive composition out of any combination of these polymers and dopants as Sakai clearly suggests that such may be done.

Wei discloses an electrically conductive composition comprising polyaniline and a polymer dopant. The dopant can be polysulfonic acid and polyacrylic acid. See column 4, lines 4-8.

Jen discloses an electrically conductive composition comprising a poly(heterocyclic vinylene) and a polymer dopant. The dopant can be polyacrylic acid and those containing carboxylic acid or sulfonic acid groups. See abstract and column 14, lines 57-65.

Tieke discloses an electrically conductive composition comprising a mixture of polyimide and polypyrrole. See abstract and examples.

While all of the references do not contain a specific example teaching a composition containing an electrically conductive polymer and a polymer dopant, the suggestion to do so is clearly stated in each patent. The skilled artisan would simply expect that the polymer dopants would produce results similar in degree to the other dopants listed and specifically demonstrated. Nothing unobvious is seen in doing so. Additionally, note that each reference teaches the shaping of the polymer material into useful articles.

Finally, the Examiner notes that some of applicant's claims require that the composition be in a form of a gel. While none of the prior art relied upon appears to disclose a gel composition, the Examiner considers this to be an obvious modification of the composition in the absence of a showing of unexpected results or other secondary showing of non-obviousness. The gel property is highly subjective and appears to be mainly a property of the

molecular weight and solvent content. These properties are highly variable by the skilled artisan for the purpose of optimizing such aspects as viscosity and thickness. Further, it appears that the gel form is merely an intermediate state of the composition before making the composition into useful shaped articles or films and hence does not appear to be that significant in defining over the prior art.

Note that, "... such changes may impart patentability to process if ranges claimed produce new and unexpected result which is different in kind and not merely in degree from results of prior art;... it is not inventive to discover optimum or workable ranges by routine experimentation." (In re Aller 105 U.S.P.Q. 233).

Also note that, "it is well settled that references are good not only for what they specifically teach or disclose, but also for what they would collectively suggest to one of ordinary skill in the art". In re Keller, 208 U.S.P.Q. 871.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 4,986,946 (Parish) and US 4,810,419 (Kunimoto et al.) each teach the production of electrically conductive shaped articles made from conductive polyimide. See abstracts.

US 4,832,869 (Cotts) teaches the production of fibers from an electrically conductive composition (column 15).

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The "person having ordinary skill" in this art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this case reasonably reflect this level of skill.

Any inquiry concerning this communication should be directed to Brad Swope at telephone number (703) 308-2521.



PAUL LIEBERMAN
SUPERVISORY PRIMARY EXAMINER
ART UNIT 115

B Swope 
July 20, 1992